Econ. Trade A

APPENDIX.

THE TENDENCY OF MANUFACTURING AND OTHER ARTS TOWARD INDIVIDUALISM RATHER THAN COLLECTIVISM.

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In dealing with a subject that will require the application of statistics, I will say at the beginning that I fully comprehend the danger of averages covering great numbers, and especially the danger of per capita computations; but I also fully comprehend the danger in dealing with aggregates and with the huge figures in which the national census is summarized. Both methods are necessary to any deductions from census figures; but both methods must, when possible, be qualified by personal knowledge of the leading facts in relation to the arts and industries which are to be treated.

One word upon the danger of aggregates. The national census of manufactures shows a vast increase in the alleged aggregate value between the dates 1880, 1890, and 1900, or any earlier date. Many political speeches have been made, illustrated by these figures. They are paraded by the advocates of high tariff in proof of great prosperity, which they attribute to the system of high protection. In point of fact, these comparisons are worthless; and yet the census of manufactures is of the greatest possible value to any real student of statistical science. The reason why the aggregate value of manufactures of the United States listed in 1900 at over thirteen billions of dollars ($13,000,000,000) is worthless, either in itself or for comparison with previous periods, is due to the duplications and triplications of the same subject. Under the head of "Textiles," the value of Cloth appears; under the head of "Clothing," the Cloth is repeated. The

list is full of repetitions of the same subject in various forms, but at the gross value of each particular form.*

Another reason why the compilation is worthless even for comparison with any previous period, although both may appear to be in the same form, is that arts are brought in to the later compilations that were not computed in the earlier.

And, again, arts, like meat packing, now counting in hundreds of millions, hardly existed twenty (20) years ago, when butchering and its product were not included. It follows that every one of these tables must be used with careful judgment and full knowledge of the subjects.

Again, in the valuation of capital, Real Estate and Buildings are given in one column, Machinery and Tools in another, and the Quick or Active Capital in the third. For reasons given by the superintendent the estimate of Real Estate and Buildings is practically worthless. Many Arts are conducted in leased buildings of which no valuation was made. The estimate of Quick Capital, Stocks on Hand, and the like, and Cash used in the business vary season by season, and are

*One of the most conspicuous instances of this misuse of statistics has been presented in a recent speech of the Secretary of the Treasury, Mr. Shaw.

After carefully avoiding duplications of the products of the farm, he proves that these products, omitting grain fed to animals, amount to four thousand million dollars ($4,000,000,000). But the animals fed on grain are as much a farm product as the grain, and, if the product of the great meat-packing and canning factories is added to his estimate, it raises it to at least five thousand million dollars ($5,000,000,000).

But Mr. Shaw then cites the product of Manufactures at thirteen thousand million dollars ($13,000,000,000), and holds that out as a brilliant picture.

If the products of the farm are removed from this category and all the other duplications regarded, the net product of Manufactures is not over forty (40) per cent. of the aggregate, or, in round figures, five thousand million dollars ($5,000,000,000). But this total is at factory and workshop valuations.

If The farm value of our products of the field	$5,000,000,000
The factory value of our manufactures	5,000,000,000
The value of metals at the mines, smelting works, and furnaces, now approximately	1,000,000,000
be added, we get a total of	$11,000,000,000

But this total again is misleading. To this sum must be added the cost of Transportation and the cost of Distribution by Merchants. Adding these items, we reach the value of the annual products at the point of final consumption.

By several methods, each sustaining the other, I have reached an aggregate much larger than any other. I make it on a population of eighty millions (80,000,000) two hundred and twenty-five dollars' worth per head, or $18,000,000,000,— a sum that few can comprehend; but, when we bring this down to the individual and the family, it tells another story.

One in each 2.60 is occupied in the work for which these figures stand.

On this analysis we find that the average product of all who take any part in this work is five hundred and eighty-five dollars ($585).

By so much as some enjoy more must others enjoy less if that is the measure of all that is produced.

so much at variance in different arts as again to be useless for any comparison.

The valuation of Machinery and Tools may be accepted as nearer the mark, and sufficiently close to be of great use in deductive statistics. But in some cases machinery is hired by the manufacturer of which the value is not given. The table of the number of persons employed and of their wages has been more accurately computed, and may be applied to deductive purposes without any misgiving. The same is measurably true in respect to the valuation of the annual product at the factory and the workshop.

At the same time I have myself never made use of any similar census data as a basis of final judgment without applying my own knowledge of several different arts or conspicuous manufactures to a test of the census figures. For instance, knowing the cotton manufacture thoroughly and having taken the census of 1880 in this art, I can compare private compilations of the value of machinery, number of persons employed, average wages, and value of product to the general results in order to verify them, it being a rule that one may take the specific records of a large print-cloth mill and may be substantially assured that the figures of perhaps one-half the cotton manufactures may so closely correspond to the conditions of one or two mills as to make the comparison of the census of the large number with the single mill of sufficiently accurate test to justify both. The same is true of many other arts.

With this introduction as to method, I submit the subsequent analysis as one that may suffice to prove a tendency on absolute grounds, even if slight variations from particular conclusions should be allowed for. I am myself satisfied that the deductions which I have drawn from the analysis of the census of 1900 will be justified, and that they constitute a rule.

Let me here remark, by the way, that we were fortunate in the appointment of Director Merriam as the chief of the Census Bureau of 1900. He made a true selection of the heads of the division. Mr. S. N. D. North, who had charge of the Division of Manufactures, now the director of the Census Bureau at Washington, possesses most unusual quali-

fications for the service. Mr. L. G. Powers, who was and is the head of the Division of Agriculture, is a man of statistical genius, whose works on Western Agriculture are among the most valuable ever issued; and the same rule of good judgment in selecting men of experience and capacity was carried throughout the whole work.

Referring to tables in the Appendix for more exact data, it appears, according to the census of 1900, that, in a population of a little over seventy-six millions (76,000,000), twenty-nine millions (29,000,000) were engaged in gainful occupations; that is to say, working for payment in wages, earnings or profits in money, the proportion being one in each 2.60 of the population. The family group is a fraction under five (5) persons. If we take out from the number of those occupied for gain the customary ten (10) per cent. whose earnings are large enough to enable the head of a family of five to support that number, it proves that, great as the product of this country is relatively to other countries, it is yet so small that two persons in every working family of five must, on the average, be kept occupied for gain, earning money for the support of the family; and this is wholly aside from the arduous household work, which does not count in the census of occupations. The proportions of the persons occupied for gain are as follows:—

In 1880.		Per cent.
Agriculture	7,670,493	46.03
Professional service	597,334	3.46
Personal service	3,476,832	20.15
Trade and transportation	1,810,258	19.63
Manufacturing, mechanic arts, and mining	3,837,112	10.73
	17,392,029	100.

In 1890.		Per cent.
Agriculture	9,013,336	39.65
Professional service	944,333	4.15
Domestic and personal service	4,360,577	19.18
Trade and transportation	3,326,122	14.63
Manufacturing and mechanic arts	5,091,293	22.39
	22,735,661	100.

In 1900.		Per cent.
In agriculture	10,438,219	35.65
In professional service	1,264,737	4.32
In domestic and personal service	5,691,746	19.44
In trade and transportation	4,778,233	16.31
In manufacturing, mechanic arts, and mining	7,112,987	24.28
	29,285,922	100.

The first great social fact which must impress every one who can derive impressions from figures is that, when the heads of families and the members of families were called upon by the enumerators not only to give the numbers in the household, but what each person did for a living, twenty-seven (27) per cent. could only reply that they were laborers; and, when we add those who could only reply domestic service and waiters, we find that one-third of all who were occupied for gain—earning money for the support of families in part or wholly—were in the grade of laborers or in domestic service.

The next great social fact which is developed by comparison of persons occupied for gain in 1880–1890–1900, respectively, is the great and rapid change which affects the social order of the whole community.

In dealing with the relative proportions in each of the arts, it must be remembered that it is probable—and, according to Superintendent Walker, almost certain—that a part of the persons who classed themselves as general laborers were in fact agricultural laborers during a part of the year. That would make but a slight change, and would affect each census in about the same proportions. It need not therefore be regarded. The relative proportion in Agriculture and Fisheries, disregarding fractions, was as follows : —

In 1870 nearly 50 per cent.
In 1880 nearly 44 per cent.
In 1890 nearly 40 per cent.
In 1900 nearly 36½ per cent.

If this reduction varied greatly from decade to decade, the computation might be doubted; but, since it follows a regular course, it may be accepted as indicating a rule which is con-

firmed by observation of the facts. It may be remarked that between 1870 and 1880 the self-binding harvester came into use. Before that invention six or seven men were required to each harvester to tie the shocks of wheat. After its complete application, at least five of the number were no longer required.

In that decade the number of farm laborers in ratio to farmers, which in 1870 was about even, began to diminish. Subsequent inventions continued to reduce the ratio, and in 1900 there were only three listed as farm laborers to five listed as farmers, but to the number may be added men listed as general laborers, who go to the farms in the harvest season.

This change in occupation has been analyzed by Mr. W. T. Harris, Commissioner of Education, in the *Forum* for April, 1898, quoted by Molinari in the "Society of To-morrow" (G. P. Putnam's Sons). I have added the data of 1900 to his table:—

	1870	1880	1890	1900
Agriculture and fisheries	491.1	460.3	396.5	356.5
Liberal professions	29.3	34.6	41.5	43.2
Personal and domestic service	184.8	201.4	191.8	194.4
Manufactures	196.2	196.3	223.9	242.8
Trade and transportation	98.3	107.3	146.3	163.1

The main point to be observed in this table is sustained by observation, and by the other deductions given in the treatise. The diversion of farm laborers from agriculture tends to an orderly and continuous increase in manufactures, trade, and transportation, from which ensues an increase in professional service; while the proportion in personal and domestic service varies but little. Housekeepers witness the difficulty in finding persons willing to perform domestic service. Time and space do not permit a statement in detail of the relative increase in the number of teachers, journalists, photographers, piano-tuners, printers, and other occupations, which are very striking.

Do not these changes indicate a tendency from occupations calling mainly for the exertion of physical energy to others that require mental energy and manual dexterity? Do not these higher branches of industry tend to the development of individualism?

Yet in this decade from 1890 to 1900 we have only begun to witness the diffusion of light, heat, and power by electricity, the telephone, the trolley, the bicycle, the automobile, and the rapid extension of good roads. All these forces may, and probably will, exert a more potent social influence than the application of steam, water power, and illuminating gas worked in the last century.

Time and space will not permit an extended review of these new forces.

These changes in the proportion of occupations suggest in the first instance a profound revolution in the conduct of agriculture. A new race of farmers has been in process of development since 1880, bred in the schools which have been so fully established throughout the great Mississippi Valley, then brought under the influence of the agriculture experiment stations, which are doing the most useful and effective work now going on in this country while attracting perhaps the least attention. These men are cultivating lessening areas of land on the intensive method of rotation of crops and with the application of the modern mechanism of the farm and the improved tools which have been developed more rapidly in this period than ever before. The effect is witnessed in larger crops of every great staple at a lessening cost by the unit of product with higher wages to the lessened number of farm laborers. It will be remarked that the number of farm laborers is less than the number of farmers, and, even if we add the probable number of general laborers who work on farms a part of the year, the effective force of farmers and farm laborers might be more equally divided; but the farmer is himself a laborer in the highest sense, and the farm laborer is on his way to becoming a farmer.

It therefore follows that the change of population from the field to the town and the increase of the urban population is not wholly due to the social attraction of the town or city, but is due to the same influences by which the forces of the great factories are lessened relatively year by year,—a lessening number of higher-grade men and women compass the increased product at a lessened cost. The cities and towns therefore attract two classes from the field and the forest. First, a class of men and women who have (or who think they have)

a capacity beyond that which is offered in the field, and who therefore resort to the town or city; and another, second—perhaps larger—body of men and women, who, not finding themselves equal to the increasing demands of the field, resort to the town or city in the hope of finding occupation within their capacity or willingness to perform.*

The chief of the Census Department of Manufactures gives the reasons why no comparisons can be made in respect to the number of establishments by comparing the figures of 1900 with those of previous decades. He also states that in 1900 the data are only approximate. No exact definition was given of what constitutes an establishment. Returns were therefore made of the cobbler shops of one man and other hand workers of like kind; but in the compilations for making up the statistics of maunfactures these hand trades were sepa-

*I am also fully satisfied that the common impression that the increasing wealth of the country is being more and more absorbed by multi-millionaires is erroneous. The wealth that is in the possession of the masters of these great fortunes forms but a very small part of the whole. In the pyramid it would be represented by a very small section of the apex. The tendency to the accumulation of very numerous moderate fortunes, which are in the aggregate vastly greater than those of the multi-millionaires, can be proved by analyzing the assessment of property for purposes of taxation in cities and towns. These reports give the ownership of real estate and of tangible personal property,— intangible personal property mostly escaping taxation. The State returns, however, of the ownership of stocks in corporations in Massachusetts give further proof of wide distribution.

From the consideration of these figures and from my own observation I feel assured that the great accumulation of wealth which has marked recent years is in the possession of a very numerous mutual class of persons who are not now counted rich, but who are in possession of moderate fortunes as compared to the multi-millionaire.

No approximate estimate can be made from these figures, but in my own judgment seventy (70) to eighty (80) per cent. of all the real estate, stocks, bonds, and other securities, and of the quick or active capital of the community is in the possession of this middle class, if so one may call them. The remainder is divided between the classes that own the deposits in the savings banks, yet more numerous than the middle classes, in the co-operative banks and the like, and the very limited class in point of number who are called the multi-millionaires, whose wealth is usually very much overestimated, as the settlement of their estates by their executors so often proves. In what exact ratios this distribution exists cannot be determined.

The common phrase, which I can only call slang, so ill-fitted is it to conditions, that "the rich are growing richer and the poor are growing poorer," has no basis in fact. As the rich grow richer, the well-to-do become more and more numerous: those who do the actual physical work find constantly improving conditions, and room is made at the base of the pyramid for great numbers to pass in to work that at least yields them a good subsistence for whom there had been no room before. It cannot fail to be remarked that decade by decade the nationality of the common laborers and of factory operatives changes.

The Americans, Germans, Irish, and Scandinavians have steadily gone up in the quality of their work and in their standard of life. The laborers who do the digging and the delving, who make the roads, cut the ditches, and make up the gangs on the railways, consist of Italians, Poles, Lithuanians, Bohemians, Slavs, Hungarians, Hebrews, and many other races; in the factories, mainly of French Canadians. In one large workshop of which I had information two or three years since, employing over three thousand (3,000) hands, a large proportion of the workmen were Armenians. In many other arts the Russian Hebrews have entered, and their children are among the brightest and most progressive in the common schools.

rated. The census of manufactures may, therefore, be taken as an approximate enumeration of all establishments from which a product worth five hundred dollars ($500) a year or more was delivered.

The census returns of establishments cover 640,194.
The hand trades representing a product of less than five hundred dollars ($500) a year number 127,419.
Leaving at over five hundred dollars ($500) product 515,675.

In the tabulated list of manufactures, classified under three hundred and sixty-six (366) titles, we find 512,294,—a very slight variation.

We may therefore derive from these tables and from the figures on Occupations of the People a proof of a tendency on the one hand toward larger factories and workshops of the collective order, in which, by great subdivision of labor, operatives watch the machines without being called upon for anything more than a mere manual aptitude or practice. (See tables in the Appendix to "A True Method of Protection.")

On the other hand, the tendency is proved toward an increasing number and proportion of small workshops, each under individual control, in which the craftsman is generated and developed, combining the power of the brain, the eye, and the hand in directing and controlling tools as distinguished from machines.

Massachusetts contains the largest proportion of the collective factories as compared to any other State, but also a very large proportion in number and quality of the lesser arts for individual branches of industry. For many years the Census of the Manufactures of Massachusetts has been taken in the intermediate years between the national computations, and the work of both the National and the State Census of Manufactures has been conducted under the able chiefs of the State Bureau of Statistics. We may therefore draw our conclusions from the statistics of Massachusetts with more assurance of accuracy than from any other State, and by comparison with them we may verify in some measure the National Statistics.

With these qualifications and claiming only to prove a tendency toward individualism, I therefore submit this study of

our present conditions. I had the impression, which so widely prevails, that the tendency was the other way; but this study has sufficed to satisfy myself that the figures which I have given are symbols of a great fact.

Another proof of the approximate accuracy of my deductions may be found in the comparison of the numbers reported in the Census of Occupations, or of persons engaged in gainful occupations, and in the census of Manufactures.

Under the title of persons engaged in gainful occupations in 1900, we find under the head of Manufactures, Mechanic Arts, and Mining, also including Fisheries, 7,112,987. Among this number are carpenters, masons, and others occupied in the building trades, of whom a small portion are listed as being occupied under the title of manufactures. Deducting mechanics employed in factories from the whole number in the building trades, the remainder is 825,833.

Now since, in the nature of the building trades, they rest upon individual aptitude and skill in the use of tools, they may be classified among those tending to individualism. This tendency has been subjected to a temporary aberration by the trades-unions, which for a time retard progress in the building trades. Their number is not large in proportion to the whole, and, in respect to the smaller number who join them, establish a rather low general average of wages based upon mediocrity, as compared to what the same mechanics would earn if each one were left free, or left himself free, to attain the full measure of his capacity in establishing for himself his own rate of wages.

Mining is not now included in the Census of Manufactures, giving occupation to 570,995.

Fishing and oysters, not included, 73,810.

Taking from manufacturing establishments the number occupied in the hand trades previously referred to, 127,419, we find a total of 1,598,057 listed in the census of Occupations under the titles of Manufacturing, Mechanic Arts, and Mining. Deducting these from the whole number, there is left a total of 5,514,930 occupied in the branches of manufacture that are separately listed under that title. It therefore follows that at the date of the enumeration of the census there were to be found in manufacturing establishments of regular industry, that number, 5,514,930.

It will be observed that the Census of Manufactures is not fixed at that specific date. The blanks call for the return of the numbers who were actually employed in specific factories and workshops in the fiscal year preceding the date of the enumeration, and that number came to 5,122,540, showing a difference of only 300,000 persons between the earlier date of the factory census and the date of the enumeration. That again proves the approximate accuracy of both branches of the census, as there would have been a gain in that year between the date of the enumeration and the later dates in the returns of manufactures.

Under the permanent organization of the United States Census, coupled with the adoption of uniform definitions, blanks, and methods in the several States, it will very soon be proved in which direction we are moving,—toward individualism or collectivism,—and what type of society will be developed from the social and industrial forces now in action.

Having thus stated the thesis on which I have endeavored to work out my own conclusions, I now submit deductions from the tables which I have compiled. I will first call your attention to Massachusetts as a State and then to the figures of ten cities which I have selected as typical of three different branches of work, bearing in mind that the figures of Massachusetts are justified both in the National Census and in the frequent, almost annual, investigations conducted under our Bureau of Statistics.

(See previous table.) We find in Massachusetts 250 branches of manufacture listed separately out of 366 titles which are found in the whole country.

Number of establishments	29,180
Average valuation of machinery and tools per establishment	$6,920
Average number of persons employed in each establishment	17.04
Average earnings per person	$458
Average value of product per person	$2,081

In Massachusetts there is a much larger proportion of the Textile Industry than in any other State. Dealing with this art separately, we find:—

Establishments	438
Machinery and tools per establishment	$174,675

Average number of persons employed in each	322.83
Average earnings per person	$359
Average value of product per person	$1,422

This is the principal collective industry of the State.

The next collective industry yielding the largest annual product in ratio to value of machinery and number of persons is the manufacture of boots and shoes.

It may be observed that this branch represents individual rather than corporation ownership, and that the work is far more that of the craftsmen than of the factory operative, yet it is a collective industry representing a very great division of labor.

Establishments		640
Machinery and tools per establishment	$9,000	
Add for machinery hired not valued in census on them*	3,000	$12,000
Average number of persons employed		91.62
Average earnings per person		$473
Average value of product per person		$2,000

The ratio of male and female workers does not vary greatly from the Textiles. There are a few more large establishments, but, by deducting the Textile and Boot and Shoe Factories from all others, we get the approximate conditions of the Collective and the Individual Branches.

TEXTILES, BOOTS AND SHOES.

Collective.

Number of establishments	1,078
Machinery and tools per establishment	$76,400
Average number of persons employed per establishment	186
Average earnings per person	$393
Average product per person	$1,528

* From the data which I have secured on the actual figures of effective boot and shoe factories under the most vigorous individual management, the product of machinery only, fairly estimated at $350,000, is approximately $7,000,000 per year, or twenty-fold. If the value of the buildings (land being of little account) be added, the total investment is $600,000. Of course, a very large working capital, varying at different periods of the year, is required. The number of hands employed, men and women, in round figures, 4,000. Weekly pay-roll averaging $40,000.

These factories are well situated where the cost of living is lower than in crowded cities, and where the dwelling-places are widely scattered under the best sanitary conditions.

	Individual.
Number of establishments	28,102
Machinery and tools per establishment	$4,200
Average number of persons employed per establishment	10.37
Average earnings per person	$503
Average product per person	$2,500

Boston is the great centre of the manufacturing industry of the State, yet there is no very large factory in the city and the building laws forbid their erection.

Worcester comes next, a city of small industries in great variety. Lowell comes next, formerly limited almost wholly to great Textile Factories, but now rapidly developing the lesser arts.

I submit a table in which the details of the manufactures of Massachusetts, of the Textiles separated, and of ten cities, will be found. (See Appendix to "True Method of Protection.") How fully these figures sustain my conclusion I leave to the student to decide. I suggest personal observation and a study of the social conditions of the several cities in connection with this analysis, with observations upon the nationality, the type and the quality of the working men and working women, and the general condition of each city.

I also append a full table giving in similar detail the manufactures of the United States as a whole and of thirteen (13) States separately. The figures may be very surprising to most people. It will be observed that the largest average number of persons employed in each establishment is found in Massachusetts, where the collective industry proportionately exceeds that of all other States; namely, 17.04 persons per establishment.

The next largest number is found where, by observation, we might expect to find them,—in New Jersey,—15.60.

The next in Pennsylvania,—14.6,—a surprisingly low average when we remember that in Pennsylvania are some of the works that employ the very largest numbers that are to be found in single works in the whole country.

Again, we turn to New York, where the city of New York is the greatest manufacturing centre of the United States, and in which State there are many establishments and very

large numbers of workmen, yet the average is only 10.79; and so on throughout the list. The average of the whole country in more than five hundred thousand (500,000) establishments only 10.36 persons to each.

Again, in dealing with these tables, and especially with those of Massachusetts, it will be observed that the Collective Industries employ the largest value of machinery and the least number of persons per thousand dollars of capital in machinery at low rates of wages, yielding an annual product which, although greater than the amount of capital invested in the machinery only, is well known to be less than the capital of most of the factories. That is to say, in the Textile Industry and in other industries of a somewhat similar character the capital is only turned over once a year or less, but in the industries like the manufacture of boots and shoes, where the amount invested in machinery or in other forms of capital is very small, the mental aptitude and capacity of the workmen very large, the annual product exceeds the capital many times.

A suggestion might well be made to review some of the modern Trusts, or Combinations, in order to determine what the amount of the "paperization" (commonly called capitalization) bears to the value of the annual product. In the Textile Industry, paperization may never be found. On the contrary, the works have as a rule been built with economy and for money paid. In some more recent instances, Textile factories have been promoted at rather high prices for payment in stock. As a whole, the capital now outstanding in the form of stock may be regarded as much less than the original cost, the capital stock having been cut down in many instances to meet the lessening cost of construction.

On the other hand, if one gives regard to what is called the capitalization, but should be called the paperization of the Steel Trust, it will appear that the product at its highest point was less in value than one-half the nominal capital represented by stocks and bonds; and that has been the case with respect to a very large number of the modern Trusts, or Combinations.

Under the conditions named in respect to steel it is manifest that there must be a margin of profit of at least twenty (20) per cent. on the product in order to yield the necessary sum

for depreciation and for the interest on outstanding bonds and dividends on the stock. It therefore follows that very powerful individual enterprises have been or are being organized on a true cash basis, of which the annual product will be much more than the capital invested, and from which a small margin or profit will pay dividends on the true capital, when the inflated paper capitals will get nothing.

In the end the Individual enterprises must be more effectively managed than the high combinations, and will, within a reasonable period, bring them to a cash basis or displace them wholly, except so far as they may own a considerable part of the crude ore and coal, of which there can be no monopoly in this country.

Again, referring to the small workshops, the individual industries, we find throughout a very small capital in proportion to the amount of work done, the highest rates of wages, and the largest product as compared to any of the Collective branches of work.

This again indicates that, although no man is paid or entitled to be paid for his work by its measure in quantity, in kind, in number of hours or strenuousness of the effort, yet every man makes his own rate of wages. He is paid for his services according to the measure of what he saves to the man who pays him, either to the employer or to the man who buys his product.

In former days each little community and almost every household made its own cloth and clothing, often cobbled up its own footwear, made its own furniture, and so on. Many could do the same work at the present time with a little preparation, especially the boys and girls who have been taught manual training. Why does not every man or woman do this work to-day? Why do they buy boots, shoes, clothing? They have no special interest in the people who do this work; they have no knowledge of what rates of wages they earn; they never see them; they may be a thousand miles off. They buy the goods because they save their own time and can make a more profitable disposal of it than if they spent it on the work which the factory operatives do for them.

There is a conscious or unconscious cerebration in every bargain and sale; and the rate of earnings, wages, and all other

forms of compensation, is fixed by the measure of the service which the buyer puts upon it, and not by the measure of the work which the workman, or the singer, or the artist, performs.

It has been held that the Collective, or factory, system and the division of labor shows the greatest progress in the application of science and invention. That is true in one aspect of the case; but, on the other hand, the improvements that have been made both in hand and machine tools are even of more importance and even more effective than those which have been made in automatic machinery. It can almost be said that, the better the tool, the better must be the man behind it,—the more skill is needed: the more the tool requires the combination of hand, eye, and brain, the greater the development of the man or the woman; and with this development come increasing wants and increasing power to satisfy the wants.

On the other hand, the Collective Branches of Industry give opportunity to common laborers to pass from the state of mere "clodhoppers" into a position which a few years since required a skilled mechanic, the automatic mechanism requiring attention and watchfulness without any considerable manual training.

The Collective Factory system has also given opportunity for women to enter into many arts. Fifty (50) years since it was a step upward from the isolation of the New England farm and its arduous duties to the Lowell cotton factory. The daughters of the farmers worked by bell time fourteen (14) hours a day, or, less the lunch time, thirteen (13) hours of actual work, in a low-studded, badly heated, and badly lighted building where they earned from 1840 to 1850 an average of one hundred and seventy-five dollars ($175) each per year, with an average product per hand of less than ten thousand (10,000) yards of heavy sheeting.

From that date there was a gradual reduction in the hours and labor, coupled with improvement and increased product in the machinery, an advance in the rate of wages, and a lessening in the cost of labor by the unit of product.

It has been held that since that date the operatives in the cotton factories have degenerated. Such is not the case. The class of working people who are now fully competent to tend

the automatic machinery would have been wholly incapable of operating the less automatic mechanism of the earlier date. The farmers' daughters of New England have passed up into far better employments, making much higher earnings, and their places have been filled mainly by people of foreign origin. In one large mill of which I have information two thousand (2,000) operatives are divided among sixteen (16) different nationalities, the larger portion being French Canadians. What purports to be the very same mill as that of 1850 has one front wall only of the former construction: it is now a large, well-lighted, well-heated, and well-ventilated building; the hours of work are ten per day, with half a day off on Saturday, fifty-six (56) hours per week; the average earnings double the former rates; the product per hand would be forty thousand (40,000) yarns if the same fabric were made, and the cost of labor by the yard greatly diminished.

It follows that, although there is less individualism in the Collective work of the factory, yet by the force of science and invention new strata in the social order (if one may use that word) are brought into view. The Industrial system would correspond to a pyramid lifted at its apex higher and higher; each class passing up to a higher plane, decade by decade, and leaving a space below for a broader base, consisting of those who would have found no place in the arts, either Collective or Individual, in the previous generation.

The time is not far off when, even in the Textile factories, one will witness similar conditions to those which now exist in steel works,—hardly a workman to be seen. The operatives in the Textile factory will number less and less as the mill becomes more automatic, until at last it will become one great combination of mechanism in which a few experts will keep the machines in order, but few operatives will be found even in the weaving-room, and they will be of the highest grade.

Thus, even in the Collective system, Individualism, personal capacity and aptitude, will become more and more the rule; and, even though the Collective factories increase in number and product, the proportion of mere operatives in the working population will steadily diminish.

It must now be observed that the function of the great factories, the iron and steel works, and others of like kind, all

of the Collective type, is only to convert the crudest product of the field and the mine into a secondary form more or less advanced; but the products of the Collective factories and works become the partly manufactured material which pass on to the next stage where they are converted into their finer and higher forms by craftsmen and skilled women who must combine the hand, the eye, and the brain in order to do their work. "What," some one will say, "are not textile fabrics the crude material of the 'sweat' shops?" True; but the poor sewing women of the "sweat" shops are there because they are either poor in their skill and aptitude or in their capacity to take the places in the clothing factory, where there is always a demand at high wages for those who possess the necessary individualism, skill, and aptitude.

Observe again that with each stage in the development of modern tools as distinguished from machinery there comes in a call upon individualism, a demand upon all the faculties; and, with this increased demand upon the intelligence, corresponding earnings follow, new wants are created, and better conditions of life are attained.

I trust that I may not be in error, that I am finding only what I hoped for rather than what is really symbolized by the figures that I have treated. Nevertheless, "faith is the substance of things hoped for, the evidence of things unseen," and one who deals with the figures of our national accounts as mere symbols of conditions cannot fail to become an optimist. They witness the evidence that mental energy is the prime factor in all material production. The quantity of physical energy with which the world is endowed may be fixed: the conservation of physical energy is a law. In the conversion of energy from one form into another our life is developed: the body of man is but one phase of this conversion of physical energy from one stage to another. But there is no limit to the power of mind over matter; there is no limit to the development of mental energy; there is no limit to progress in directing the conversion of physical energy from one form into another: and, since mental energy is and always will be the prime factor in all material production, one may upon that basis predicate a rule,—The power of consumption is limited, the power of production is unlimited. Whether or

not there shall be temporary or local congestion and want for lack of the means of living or widely diffused abundance will rest wholly on the development of human intelligence, on the suppression of the brutal instinct of war and warfare, and on the repeal of all statutes that conceal a subtle perversion of the power of public taxation to purposes of profit.

Again in the system of law that forbids interference with the equal rights of every man to enjoy the fruits of his own capacity will be found a true law of material progress.

Taxes on crude wool, ores, on lumber, dyestuffs, and chemicals yielding but a small fraction of the revenue, yet heavily increase the cost of the product of our own factories, and thereby they tend to protect the foreign manufactures in competitive countries whose rulers are too wise to put any taxes upon the material necessary to their own domestic manufacture.

Witness the fact that Protection fails to protect both wool and woollen manufactures. Under the existing conditions the domestic consumption of raw wool has diminished, while the import of woollen manufactures has increased. The heavy tax upon wool has so far advanced the cost of materials that even under yet more excessive taxes the foreign goods are protected and are brought in in increasing quantities. Taxes on food and fuel, on fish, vegetables, provisions, and coal, increase the cost of living and oppress those who earn the least wages more than any other class, while they are of advantage to no one,—mere obstructions to progress. Such taxes fail to assure even the control of the home market, and surely retard foreign exports. The burden is diffused in the most subtle manner, so that no one can measure the retarding influence until such taxes are removed.

That is proved by the economic history of Great Britain, but we may witness the progress which ensues from the removal of petty taxes in our commerce with Porto Rico, since reciprocity was established with that island imports and exports advancing fivefold in less than five years, or from an aggregate of four million dollars ($4,000,000) to over twenty million dollars ($20,000,000), about evenly divided between imports and exports.

The experience of Great Britain between 1842 and 1856 also

proves that with every remission of the petty taxes that were taken off, under the leadership of Sir Robert Peel, manufactures, trade, and commerce went forward by leaps and bounds, and the population of the British Islands was brought up from the most disastrous conditions that ever prevailed, as they existed in 1840, to the most prosperous conditions, under which they have continued down to the present time, retarded of course at different periods, and especially at the present time by the brutality of war and warfare.

Our own national progress has only been slightly retarded by the interference with free commerce on the seas. The absolute free trade among the States and the impossibility of supplying the greater part of the manufactured goods required from any foreign source has rendered even the present excessive tariff no very serious obstruction. Its worst effect is the political corruption that it engenders. The system is now intellectually dead.

In the tendency to individualism and to an increasing product in ratio to numbers employed, I foresee that the time will come when the home and the family will again become the unit of society, when the head of the household will be able to support the average family, and the evils of overcrowding will be overcome. The force of invention now tends to the wider area of cities, the closer neighborhood of farms of lessening area.

Some of you may live to see the day when a good subsistence and a comfortable home will be so well assured to every man of average intelligence and industry that it won't pay to be rich, and when all may enjoy the leisure so well defined by an old Bohemian in one of my cooking-books,—"Leisure," he says, "consists in the diligent and intelligent use of time."

I happened to be employing the little leisure that I can find in the conduct of my affairs to the solution of this problem, but have had to hasten the work, since only two or three days ago Mr. Brooks asked me to submit it to you. A complete study of the forces now in action that are symbolized by the figures submitted to you cannot be made by any private investigator, and I trust that Mr. North, the superintendent of the Census, will be impressed with the aspect of the case herein presented, and may so organize the affairs in the Census De-

partment as to bring out the relative numbers and conditions of the Collective and Individual branches of industry on the lines which in this paper I have merely sketched.

My own observations during over sixty (60) years of employment by corporations has led me to the same conclusion to which this analysis leads, namely: the corporate or collective system is necessary in the conduct of railways; it is convenient for the organization of many departments of industry; it has been adopted in many manufacturing corporations, where it has proved to be a somewhat costly and ineffectual method. In all the large and necessary corporations you will observe that some one man comes to the head with paramount influence. Sometimes he is advanced too rapidly, he loses his head, he fails and is removed; but without this paramount influence of individual power and capacity there is no efficiency either in the railroad or the manufacturing corporation.

In the manufacturing corporation I have witnessed many beginnings by a few powerful stockholders concentrating their force under a strong management: hence success, with full dividends. These attract attention, gradually the stock becomes widely distributed, the founders die off, and it falls into the ordinary management without a single responsible head: then comes failure and re-organization. The history of corporate manufacturing, I think, in a majority of corporations is a record of alternate success, failure and bankruptcy, reorganization and reconstruction, the necessity of individualism declaring itself in every phase.

In the lesser arts the corporate system seldom attains, except in recent years as a substitute for limited partnerships. Individualism is implanted in human nature. Effective work demands personal liberty, freedom of contract, and the unrestricted use of all the elements of production and distribution, including time. All efforts to restrict the exchange of products, of course admitting necessary police regulation by legislation, and all efforts of trades-unions to limit the use which each man may make of his own time and his own capacity offer temporary obstructions to progress and welfare. One after another these devices attract unpractical, sentimental, or selfish persons, and are imposed upon large numbers of people often against their will.

In the end, individualism has prevailed, and will prevail. Every attempt to deprive adult men and women of their liberty to use their own faculties for their own benefit, which they cannot do in trade or commerce except to the mutual benefit of those with whom they deal, will in the lapse of time be rejected, and the fundamental law of personal liberty will yield the utmost benefit and the greatest measure of human welfare.

I entered upon this investigation with this impression on my mind, but I have endeavored to analyze the figures which I have presented to you without being biased, and to put before you the positive results which may be derived from them.

I trust the superintendent of the Census may adopt and improve my methods. I have only been able to show the way and to give this imperfect sketch. If the trained experts of the Census Department should tabulate the arts and occupations by classing the collective factories and workshops in their order and the lesser arts according to their kind, and by classing occupations by the relative demands on the faculties of brain, hand, and eye with corresponding tables of relative earnings, I am certain that the tendency to individualism in every occupation would be proved.

Another factor in material progress should be noted. In the last century the profit of each generation consisted wholly n saving the waste of the previous one. In the present century it seems even probable that the profit of each decade will consist in saving the waste of the previous ten years. Inventions are now proceeding with such rapidity, and the forces of electricity, of gas engines, of steam turbines and new tools and machines, are coming on so fast that the progress of the factory and the workshop may be more fully indicated by the size of the scrap heap than ever before. If the improbable should come to pass, and it should prove that the great bogs of carbonaceous material which have formed in all the hollows of the glacial drift of the North, and in the morasses and lagoons of the South, are in fact coal in its primary form, needing only a simple and cheap mechanical process in place of geologic ages to convert it into fuel, coke, and gas, another unlimited supply of power will be added to our resources.

I have called attention to the fact that the profit of each

generation in the past has consisted in saving what was wasted by the one before. The next great saving in waste may be in architecture, in saving the waste of roof space. Architecture should stand at the head of all the arts, yet we have developed no national type. The common type of roof (now giving place to flat roofs, seldom fully utilized), whether the pitched roof, the Mansard, or the crazy roof decorated with inverted mustard pots and pepper boxes, and the hollow flat roof with wooden cornices, are all bad and dangerous. The interior of the pitched and Mansard roofs is usually encumbered with combustible rubbish, while the exterior seems to have been devised for the special purpose of catching sparks and attracting flame, so that the spread of a conflagration is most fully assured. Perhaps the worst examples of bad, wasteful, and dangerous roofs are to be found on asylums, hospitals, and often on school-houses and college buildings.

When safe and solid construction takes the place of combustible architecture, flat roofs may be so constructed as to become the resort of those who dwell in tenement houses in the hot nights of summer; they will give place for roof hydrants and fire apparatus protected by parapet walls on business blocks; they will provide open spaces in summer, glazed in winter, on the school-houses that are in crowded cities with no sufficient playgrounds attached; they will give places for sun and air upon hospitals where sun rooms for winter use may be glazed, and tents may be put up in summer. In short, if true regard be given to the motive of each building, the present waste of nearly all the roof spaces of cities may be saved and put to useful purposes, adding an area at very slight cost equal to the ground area on which city buildings now stand.

A beginning has already been made. The roof gardens on a few of the hotels in upper New York and on some of the theatres, and the provision for recreation of the employees upon the top of the latest and safest of the department stores, prove that true architects, or some owners who direct architects, fully comprehend this subject.

It is sometimes held that the soul of a people is embodied in its arts, especially in its architecture. If that is true, in what type of architecture is the soul of the people of this country expressed? Possibly in the old colonial type of a detached

dwelling-house standing for the home and the family. Who can name any other example? The reversion to that type is a hopeful sign of the present time.

The mention of cement opens another broad field for reflection. The most backward art in the United States is what may be called in this treatise the Manufacture of Buildings, in which the largest body of workmen outside of agriculture is occupied, constituting the Building Trades. This art is under the supervision (I wish I could say the intelligent direction) of a special class called Architects, who are ambitious to be artists, but who until recent years paid very little attention to engineering or to the principles of construction, holding the utterly erroneous position that the work of the engineer and the builder did not constitute a necessary part of the training of the artistic architect, and forgetting that some of the greatest architects of the Renaissance were among the greatest engineers of their day. I may only name Michel Angelo, Brunelleschi, and Leonardo da Vinci.

A change is rapidly going on under the urgent call of men of affairs for competent architects who may be capable of constructing buildings that shall not go rapidly into the ash heap by way of fire. As I once told Sir John Cockburn when witnessing the active work of the Boston Fire Department, "We may judge of the architecture of this city in inverse proportion to the activity and skill of the Fire Department."

The beginning of architecture and also of printed or inscribed records is found in the age of clay, when unburnt bricks were the materials for the construction of buildings in Egypt, and clay tiles marked the beginning of books of record in Assyria. In the course of time the work of construction passed from the age of clay or unburnt brick to the age of stone with timber roof, where roofs were needed. The next stage was the age of brick or stone with open timber construction in the cathedrals and other buildings; much later came the age of the basket-framed wooden dwelling encased in brick or stone walls of tolerably solid construction; presently passing on to the age of sham or of wooden structures of the most combustible kind set off within brick or stone walls in churches, memorial halls, school-houses, and dwellings, giving a sham architectural appearance on the outside, but provided within with every

possible open way for fire to pass protected from water from the heating apparatus in the basement to the peak of the hollow roof. Next came the age of cast iron and of wrought iron combined with brick and timber, from which we have passed into another age of sham or to the basket-work construction of light steel, exceedingly subject to corrosion, holding up under fire so as to assure the complete destruction of the contents even without serious injury to the frame, and veneered on the outside with brick or thin slabs of stone.

We are now passing on in the upward spiral of progress again to the age of clay,—burnt clay in brick and tile and plastic materials,— concretes, cohesive tiles, bonded by cement, combined in new forms of solid, durable, and true construction, to which true architects may give dignity and æsthetic beauty such as can never be imparted to the sham construction of steel and veneer.

Book-making passed from the age of clay tiles through the use of papyrus, palm leaf, and parchment, thence into strong, well-made fibrous paper; but now, alas! passing downward, not upward, into the age of wood pulp loaded with clay, a reversion of the most detestable order, from which it may be hoped that we shall emerge when science and invention find a way to make good paper,—durable, strong, and light without the clay,—and save us from being cheated with clay products combined with mere pulp that possess neither present merit nor permanent durability.

In this reversion to clay and plaster materials we may soon witness the beginning of a national type of architecture, untrammelled by the quality of the materials to which our buildings have been restricted. Let us hope for it. Again, this means Individualism in the practice of architecture, the study of the motive of each building, the adaptation of the products of clay and plastic cement to the special condition of each section of the Union. It may be hoped that, in the progress of this change, men will come to the front who, combining the functions of the architect and the engineer, may be trusted to design the great factories and workshops, and who may put into them evidence that industrialism and true art are not inconsistent with each other.

We are entering upon a century of industrial activity in

which militarism, imperialism, and war will be suppressed by the force of commerce.

I use the word "force" in order to call attention to one of its most singular applications in the manufacture of killing instruments.

Very truly has Dr. William Everett observed that "man is the only illogical animal." In proof of this witness that the most potent agent in promoting the era of peace is the inventor and manufacturer of killing implements and machines. These men seek only their own personal profit. The manufacturers are governed by commercial motives. They seldom, almost never, take any personal risk in the use of the weapons that they make. A glance over only a few names will prove this. A slight investigation also proves that the profits in this branch of manufacture have been very large, leading to some of the largest fortunes. We may name only some of the more conspicuous among the inventors and the manufacturers of killing machines: Krupp, Armstrong, Hudson Maxim, Winchester, Remington, Whitworth, Hiram Maxim, Sharp, Ericsson, Laird, Gatling, Cramp. I have the impression that the Mauser, Krag-Jorgensen, Martini-Henry, and other European rifles are the invention of civilians, but, where men of inventive capacity may be forced into military service by conscription, some inventors may be in the service. These are the names of civilians by whom inventions have been made, and science has been applied for commercial purposes. Not one has ever appeared among masters of the art of war.

On the other hand, not one name ever conspicuous in military or naval records appears among the inventors. Glance over the list of names of men who have become famous in war, and, with here or there some minor or temporary improvement, not one is credited with any invention of any permanent importance in the conduct of war. As one of the greatest inventors in this line once wrote to me, "Had it been left to military men to invent their own weapons, they would have been fighting to-day with stone axes and wooden clubs."

Yet more, all the great inventions have been forced upon military and naval officers. The "Monitor" was built at private cost and forced into our navy, where it met and destroyed the "Merrimack," which had been built at the instance of

Governor Wise of Virginia, who had no military record. It saved the navy of the United States from destruction, and perhaps saved the nation. The reason is plain. A type of mind which is capable of comprehending grand strategy and the science of warfare is not inventive. It is conservative. It deals under certain general principles with things as they are, and hates to have all its tactics, drill, alignment, and method of developing armies changed and altered.

We are fortunate and singular in this country in having no military class or caste, nor does either the army or navy service attract intelligent men for any reason that it leads to a high social position. The graduates of West Point, brought together from every part of the country, subjected to a rigid but very narrow course of instruction, are sent away as soon as they graduate to distant points; seldom met in what is called society; always welcome when they do appear.

The graduates of the Naval School at Annapolis are assigned to duty at far distant places; seldom met in society, as it is called, perhaps oftener than army officers because the navy yards are near cities. They, again, are always interesting because in the peaceful duties of the navy, in the coast survey, the maintaining of lighthouses and other scientific pursuits, their minds are broadened and led to a wider interest than the ordinary duties of the army officer lead to.

Again, one of the great advantages of this country over every European nation is the conspicuous absence of the regular soldier on the streets of cities, yet more in the rural districts. How many of the younger people of the present generation have ever seen a regular soldier in uniform?

Neither career offers any future to a man of inventive capacity or great organizing power. It follows, especially in respect to the naval service, since it became, as some one has said, "a very dangerous branch of mechanical engineering, very much underpaid," it ceases to hold the men of highest capacity. Many, very many have left before reaching middle life to take the places which are always open to them, which call for a much higher standard of ability and for more useful service than in the navy, promising to lead on to fortune in place of dependence in old age upon a meagre pension. It would not be suitable for me to name the large number of men

who have graduated in these schools, who are now in charge of many of the largest works in this country, but they are well known to every one who comes in close contact with these establishments.

Witness again the power of the inventor in the almost childish proposal of the czar, even in his broad design which led to the organization of The Hague Conference. He proposes to stop the progress of invention and to limit killing instruments to their existing conditions. He would put limits on the hell of war, lest it should become so conspicuous as to stop warfare. Of course such proposals are futile and fleeting. The inventor is more potent than the czar, and the Russians are now meeting the proof.

Again, the efforts of the charitable to mitigate the horrors of war, and to bring the Red Cross organization to alleviate suffering, merely serve as almost transparent screens, covering, but not hiding the abomination and barbarity of the whole system.

Yet there are men to whom service in the army and navy is always attractive, even though not governed by the mere brute element which we find in such books as the "Autobiography of Lord Wolseley" (whose name has perhaps been misspelled: it might read Wolfsley), in whom the survival of the brute, even coupled with high intellectual qualities, indicates the degradation to which manhood may be brought in the practice of a profession.

The class of men to whom service in the army and navy is attractive will still be called for even when the great battleships have passed away, and the absurd dogma "In peace prepare for war" by exhausting the resources of a country has been exposed and been rejected. There will for generations to come exist the necessity of a moderate force for the protection of commerce from predatory nations, and there will be need, as there is in Canada, of a national mounted police which calls into its ranks men of high character and standing.

Again, the peaceful service of the navy may always draw into it men of ability whose interest in science finds opportunity in the development of the service to which I have previously called attention.

The advocates of peace are not, as a rule, non-resistants or men of peace at any price. What they seek to compass is the limit of armies and navies to the defence of liberty, of the freedom of the sea and the protection of commerce against privateers, pirates, and predatory rulers, waiting for the time to come when dynastic families kept in place by caste and privileged classes have either degenerated and died out, or have been deposed by the establishment of popular sovereignty among the masses whom they now oppress.

There is nothing more shallow or sophistical than the tone in which what is called Commercialism is often held up to scorn.

By way of commerce human wants are supplied and human needs are met.

It requires the service of men of more commanding ability than armies or navies, and at its behest the century on which we have now entered will be dominated by its power.

One only needs to review the events of only six generations of the customary number of years, so defined, to bring before his mind the evidence.

It was one year after I was born when the first steam locomotive passed over the iron rails on this continent.

When my father was born, there was not a power loom in this country and very few in England.

Modern industry and commerce have been developed within the span of a single life not yet fully spent. All these forces tend toward the "Eternal Peace" that Immanuel Kant predicted a century since:—

> "Can this thing come to pass?
> Nay, if it be, alas—a Vision,
> Still let us sleep and dream it true;
> Or sane and broad awake,
> For its great sound and sake,
> Take it and make it Earth's and Peace ensue."
>
> *"Arthur Arnold."*

I have said that one who can read the lesson of which these figures are the symbols cannot fail to be an optimist, as he comprehends the forces that have so changed the conditions of the world in the nineteenth century. Before that period the progress of the world had been by war: in that period that

power of commerce began the suppression of war, and the development of science is now rendering the suppression of the predatory nations more certain.

It may be deemed only a vision, even a mere fancy, to predicate the cessation of warfare on the forces of invention and of commercialism. There is much shallow sophistry in the denunciation of commercialism; but what is it? The word stands for the conduct of commerce, and it is by commerce that the hungry are fed, the naked are clothed, and the homeless are housed. It rests on mutual service, it demands peace and order, its conduct rests on probity, integrity, capacity, and character.

The practical man can find in these conditions, and in the present application of power, light, and heat generated by methods unknown before the men of threescore years and ten had reached middle life, the assurance of yet greater abundance, more widely diffused, when the war of tariffs shall have become as grotesque and as futile as the war of battleships is becoming, when met by torpedoes and submarine destroyers.

The idealist who accepts no dogma and admits no final authority in either science or philosophy can find in the "ion," or spark of mental energy by which his life is governed, the promise of the infinite and the eternal, the light that leads up to the high thought that can never alter. To him

> "The one remains, the many change and pass.
> Life, like a dome of many-colored glass,
> Stains the white radiance of eternity,
> Until death comes, and shatters it to fragments."

A few words of more general import in conclusion. The imagination is a prime factor in the promotion and in the conduct of all large undertakings. I mean not the mere fancy of the unreasoning speculator or stock gambler, but the forecast and power of basing present action on the long distant future. I may cite the late Oakes Ames as an exemplar. He was a skilled mechanic who had reached more than middle age in the prosaic occupation of making shovels in which he had secured a fortune. None would have imputed imagination in the ordinary sense to him. He was a man of strict integrity, of solid character, and the highest probity. Elected to Con-

gress, his imagination was aroused by what then seemed almost a fanciful project of binding the Pacific States of the Union with iron rails. This great conception took possession of him, and into it he put his whole fortune at the greatest risk. True himself, he did not suspect others. He became allied with men of great ability, but of little honor or integrity, and they betrayed him. In the pursuit of this great national work he sought support among his associates in and out of Congress. He used his personal credit in the rashest manner in order to bring in funds necessary to the conclusion of the great work. Prudent men distrusted the undertaking, and refused to invest. His colleague, Mr. Samuel Hooper, risked a large sum, and, when other colleagues deserted Mr. Ames, he stood by him manfully and justified his course. For years success was doubtful, but at length it was attained. Attacks were then made on all who shared. The base deserted him, and cowards in Congress went back on him, trying to screen themselves from acts for which they might have been proud by imputing to him corruption and venality. This man who had accomplished more to maintain the union of the Pacific and Atlantic States than any other man in civil life was hounded to his grave by an unjustifiable and unmerited vote of censure.

But the imagination is also a potent factor in causing temporary depression and retardation in material progress, leading sometimes to senseless panics. At the present time we witness an example. The word "protection" has become a sort of fetish, and, when changes are proposed in the tariff, business men begin to halt in all their transactions, even those who could only gain with every removal of a duty on imports, who are by far the largest number occupied in business. They imagine that there will be a great change in all prices, and then they buy and sell only from hand to mouth, ceasing to lay up even their customary and almost necessary stocks.

This country was never before so full of wealth as it is now. There never was a greater amount of capital waiting for investments. The opportunities for the expansion of industry, of trade, and of commerce, were never so great, yet depression exists, and, in the common phrase, "trade is very dull." Why? The tariff question is up, and all think they must wait to see what Congress will do. If only the fact could be made plain

to every one that whether by means of the high tariff which has been enforced for a generation since the end of the Civil War, or in spite of it, our arts have reached such a state that out of over thirty million (30,000,000) persons now occupied for gain, supporting eighty-two million (82,000,000) population, not one million (1,000,000) could be harmed, while all the rest would be benefited if every duty upon imports were repealed and every custom house were razed to the ground! Were it not for this misleading imagination, activity might take the place of the present depression. No one even suggests such a radical measure, nor could absolute free trade be reached, even if it were believed to be most desirable, under the present necessity for collecting a moderate revenue for duties on imports. But may not the proofs which are herein assembled bring support to such a change in duties on imports as shall make it certain that all taxes that the people pay the government shall receive? Can any one sustain a policy by which the power of public taxation is perverted to purposes of private gain? May we not demand reciprocity on the one hand, and the adjustment of duties on imports in such a manner as will best promote domestic industry, protect American labor, and assure the public welfare?

If in this effort to bring public support to a true policy of protection to domestic industry and to the tendency to individualism, these treatises may be timely and serviceable, I shall be well satisfied. I shall be no more scared by the hard words that may be uttered than I have been by the foolish cry of "traitor" which was put upon me because I stood firmly on the principle of liberty and denounced criminal aggression upon the people of the Philippine Islands.

The principle of liberty is too deeply embodied in the institutions of this country to be overcome by any legislative restrictions not rightly covered by the power of the police to prevent abuse. Free soil, free speech, free press, the greatest possible freedom in the division, purchase, and sale of land, Free Trade on a continental scale within our own domain, have been attained. The few restrictions on the right of every one to enjoy the free use of his own time and capacity will soon be abated.

Protection of Pig Iron—What did it cost?—Who gained?—Who paid?

I submit the analysis of the iron and steel industry from D. A. Wells's last book, entitled "Recent Economic Changes." I shared with him in making this analysis, which is carefully guarded, is conservative, and is far within the mark in proving that in the ten years which elapsed from 1888 to 1897 the excess of disparity in price paid by the consumers of this country mainly to the producers of iron and steel, stated by Mr. Wells at five hundred and sixty million dollars ($560,000,000), was in fact nearer seven hundred million dollars ($700,000,000) than the sum named. This disparity, whatever the price may have been in either year in this country or in Europe, rendered it impossible for the converters of pig and bar iron into machinery and the higher types of metallurgy of this country, to compete with the workshops of Europe, while the iron and steel makers of the crude forms of pig, ingot, and bar were enabled to convey enormous sums from the pockets of the consumers into their own quickly accumulated wealth. The intermediate consumers of these crude forms of metal, the machinists, the tool makers, and that vast body of craftsmen far more numerous than all occupied up to the pig, bar, and rail, were restricted and oppressed, while their competitors in Europe were fully protected in their control of all other markets of the world, and in part of the home market in this country.

It will be observed that American labor was not protected. The proportion of hands occupied in mines, coke ovens, furnaces, and rolling mills, is but a small fraction of the persons occupied in all the manufacturing and mining arts: a small portion even of that force consists of skilled labor, the larger portion being common laborers of a very low type,—not their fault. But American labor, either native or native born, finds occupation of a much higher and more useful quality than to work under the squalid conditions of the mining towns and of the blast furnaces as they were in the period. It followed that the mine owners and furnace men imported foreign workmen of every type to fill places that they could not fill at home at very low rates of wages, bringing about the most dangerous and squalid conditions of life that have ever existed in any

section of this country, hardly yet alleviated. What had been protected and what is the necessary course of interference in the conduct of an art which could not have been kept out of this country by any legislation short of prohibition was the gradual concentration of the control of all the great establishments among a lessening number of owners, a greater and greater subjection of the workmen to their control, strikes, violence, and conflict from time to time, until in 1890 the home competition and the very great skill of the men who had taken the lead brought prices down to a parity with foreign prices or even less, proved that the artificial stimulus of protection had never been required, and brought about even conditions in the prices of crude iron and steel in this country and in Great Britain. Straightway the higher forms of metallurgy—the conversion of these crude forms into their higher types—went on by leaps and bounds, and the exports of machinery amounted rapidly to over one hundred million dollars ($100,000,000).

But the concentration of the iron and steel works went on, culminating in the Steel Trust in which all the real capital represented was less than what the consumers of iron had paid in ten years in order to support what was grotesquely called an infant industry. The fortunes of the great multi-millionaires, so far as they have realized them in cash by getting rid of the paper stock of the steel trust, represented in part their skill and ability. Many of them were men who would have built up the iron and steel industry without protection as surely as they built it up under the system. Their excess of profits beyond the normal rates in unsubsidized work conveyed from the pockets of consumers into their hoards amounted to more than the cash value of all the property that they put into the Steel Trust.

The end is not yet. The public has not been gulled into a digestion of these paper stocks. Strenuous competition has been rapidly developed; the prices of iron and steel are again about at a parity with foreign prices; the exports of machinery and tools are again increasing; and the public has begun to comprehend the axiom put forth by Mr. Havemayer, that "the tariff is the mother of trusts"—and yet more, the instrument by which the multi-millionaires of the Steel Trust have secured in part, if not wholly, their enormous gains.

The natural law of free exchange and competition evolves high wages, low prices, large product, and a lessening margin of profit on each unit of product. That is the law of progress. The Steel Trust gives a most conspicuous example of the law of retardation and obstruction,—low wages, large profits, restricted consumption, compelling help from imports even at very high prices and excessive duties, higher branches of industry greatly retarded, private profits enormously augmented.

But, if the only objection to the system of protection were its cost, even if, for each dollar which the treasury receives on tariff taxes, another dollar must be added which the people pay, but which the government does not receive, the burden in dollars and cents would even then be of relatively small importance. The continental system of free trade has saved us from any serious injury through the privation of free commerce with other countries. The evil is not disclosed by the mere cost: it is far deeper. Protection generates a privileged class. Patronage in the distribution of offices becomes one of the instruments by which the privileged class secures political influence. Privilege, patronage, and protection are synonymous terms. Whenever and wherever, or under whatever party name, the power of public taxation is or can be perverted to purposes of private gain, the politics of the country are degraded. Public office in place of being a public trust is perverted to the support of private trusts.

In districts and in States, men of the highest intellectual capacity, most capable of becoming statesmen, are practically barred from public office because they will not submit their convictions of right and justice to the demands of the privileged class by whom the caucuses are managed and the members of Congress are nominated. In other cases, in some very notable instances at the present time, men in high positions have sacrificed their own convictions in order to attain high political position in Senate and House. Such men are used by the privileged class to promote their own purposes, but they have neither the respect nor confidence even of their own supporters. There can be no true statesmanship, no true selection of representatives in Congress, no true organization of the civil service, so long as the power of taxation is per-

verted to purposes of private gain, miscalled protection. Even if this policy had promoted greater material welfare, even if it had accomplished the alleged purposes and in many, many cases the honest and sincere purposes of its promoters, yet it must be condemned. The price of political corruption would have been too great, even if material success had been attained. But having utterly failed,—having retarded rather than promoted the material welfare of the nation,—it must be condemned economically, morally, and politically.